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6 Attorneys for Plaintiffs-Relators

7
8 **UNITED STATES DISTRICT COURT**
9 **CENTRAL DISTRICT OF CALIFORNIA**

10 **UNITED STATES OF AMERICA**
11 *ex rel.* **IONM LLC**, a Delaware
12 corporation and *ex rel.* **JUSTIN**
13 **CHEONGSIATMOY, M.D.; STATE**
14 **OF CALIFORNIA** *ex rel.* **IONM**
15 **LLC**, a Delaware corporation and *ex*
16 *rel.* **JUSTIN CHEONGSIATMOY,**
M.D.; LOS ANGELES COUNTY *ex*
rel. **IONM LLC**, a Delaware
corporation and *ex rel.* **JUSTIN**
CHEONGSIATMOY, M.D.; and
JUSTIN CHEONGSIATMOY,
M.D., in his individual capacity,

17 Plaintiffs,

18 v.

19 **UNIVERSITY OF SOUTHERN**
20 **CALIFORNIA**, a California
corporation,

21 and

22 **USC CARE MEDICAL GROUP,**
INC., a California corporation,

23 Defendants.

Case No. 2:18-cv-08311-WLH (AS)

**NOTICE OF NO SETTLEMENT
OF THE GOVERNMENT
CLAIMS TO DATE**

24
25 Plaintiff-Relators IONM LLC and Justin Cheongsiatmoy M.D., hereby provide
26 NOTICE as to the outcome of the October 13, 2023 Settlement Conference with
27 Magistrate Judge Alka Sagar that, to date, there has not been any settlement of the
28 Government claims and there has not been any settlement of Dr. Cheongsiatmoy's

1 individual claims/representative PAGA claims. See attached Exhibit A, B, C, D, E, F
2 non-confidential documents outlining the Governments' knowledge of Defendants'
3 fraud for which Dr. Cheongsiatmoy's individual and representative PAGA claims are
4 predicated.

5 On May 26, 2023, the Court and the Governments were informed via the Joint
6 Rule 26 Report signed by Defendants that "Nichols Kaster left the case in March
7 2023" and that Alice Chang is the only counsel of record for Plaintiff-Relators in this
8 case. See Dkt. 218.

9 On June 23, 2023, the Court, Government and USC counsel were further
10 informed in writing by Nichols Kaster that "The attorneys of Nichols Kaster are no
11 longer counsel of record on this case..." See attached Exhibit G. Desai Law Firm also
12 informed the Court, Government and USC counsel of the same. See Dkt. 213.

13 On September 14, 2023, Frankie Allegra-Garofalo, Law Clerk to Magistrate
14 Judge Sagar, wrote an email to Alice Chang and Counsel for USC and stated that any
15 request to continue the September 28, 2023 settlement conference "must be submitted
16 to Judge Hsu" and that "the request to continue must be approved by Judge Hsu."
17 Frankie Allegra-Garofalo, Law Clerk to Magistrate Judge Sagar further instructed:
18 "Please submit this request to Judge Hsu and let [Judge Sagar] know." See attached
19 Exhibit H.

20 On September 26, 2023 at 2:28PM, District Court Judge Hsu issued the Order
21 filed at Dkt. 259 stating: "IT IS ORDERED THAT the MSC date is continued to
22 October 13, 2023."

23 On September 26, 2023 at 3:20PM, Alice Chang responded to Magistrate Judge
24 Sagar Law Clark, Frankie Allegra-Garofalo's September 14, 2023 instructions and
25 promptly informed Judge Sagar (with all Governments and USC counsel on copy)
26 that: "In response to [Chambers for Magistrate Judge Sagar's] request below to let
27 [Judge Sagar] know when the new MSC date has been approved by Judge Hsu, please
28 see the attached Order filed at Dkt. 259 today continuing our MSC date to Friday,

1 October 13, 2023.” See attached Exhibit H.

2 On September 27, 2023, Magistrate Judge Sagar’s United States Central
3 District of California Calendar documented “no calendar” (see attached Exhibit I), yet
4 there is a conflicting record of Judge Sagar presiding over a Settlement Conference in
5 this case on September 28, 2023 (see Exhibit J). Alice Chang, the only counsel of
6 record for Plaintiff-Relators in light of the above, was not given the opportunity to be
7 present for any settlement conference on September 28, 2023.

8 On October 4, 2023, Judge Sagar held a teleconference with Ms. Chang to ask
9 for further clarification regarding deficiencies in Defendants’ disclosure to the
10 Governments given no settlement of the Government claims to date and to provide
11 the Court and Defendants a Supplemental Settlement Conference Statement given that
12 there was no settlement of any claims, including no settlement of the Government
13 claims to date.

14 To date, there has been no settlement of any of the claims in this case including
15 the Government claims for which Plaintiff-Relators have requested and continue to
16 request the Governments (United States of America, State of California and Los
17 Angeles County) file a formal Notice of Declination of all the Government claims to
18 allow the Government claims to move forward without further prejudice to Dr.
19 Cheongsiatmoy’s individual and representative claims which are predicated on
20 proving the true extent of Defendants’ fraud.

21 A Joint Report to be filed within 7 days per Judge Hsu’s Order.

22
23 Dated: October 13, 2023

24 By: /s/ Alice Chang
25 Alice Chang, Attorneys for Plaintiff-Relators
26
27
28

Exhibit A



Rebekah L. Bailey
Direct: (612) 256-3287
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bailey@nka.com

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April 29, 2022

VIA EMAIL

Frank Kortum
Assist. U.S. Attorney
U.S. Attorney's Office
300 N. Los Angeles St., Suite 7516
Los Angeles, CA 90012
Frank.Kortum@usdoj.gov

Re: *United States ex rel. Cheongsiatmoy v. Univ. of S. Cal.*, No.: CV 18-08311-FWS-AS

Dear Assistant U.S. Attorney Kortum:

I write on behalf of Relator Dr. Justin Cheongsiatmoy in response to Defendant USC Care Medical Group, Inc.'s ("USC Care") April 15, 2022, letter addressed to AUSA Kortum, DAG Fisher and Attorney Neumeister. (Apr. 15, 2022 Ltr. (hereafter "Ltr.").)

USC Care's latest correspondence is yet another attempt to narrow the scope of Relator's allegations in order to distract from the systemic fraud and compliance failures committed by Defendants. In response, Relator points to the deficiencies in Defendants' letter and highlights for the Government the allegations of fraud to be litigated from Relator's Fourth Amended Complaint ("4AC").

DEFENDANT USC CARE'S APRIL 15, 2022 LETTER TO THE GOVERNMENT

USC Care's most recent correspondence capitulates yet again to another category of fraudulent billing practices, brought to light initially by Relator, that violate the False Claims Act (FCA). (See, e.g., 4AC ¶ 201; ECF No. 89.) This latest admission, similar to previous disclosures,¹

¹ Relator is unaware of any investigation by and/or disclosures by the original Defendant, USC. Relator is only aware of the disclosure and offer by Defendant USC Care to repay \$168,628 made to OIG HHS on March 27, 2020, related to claims submitted on academic days for Drs. Gonzalez and Shilian (\$79,405) and for billing for IONM services in ENT procedures (\$89,223) at USC Keck Hospital ("Keck") during a specified time period for federal programs, as well as the offer to return overpayment in the amount of \$316,544 made to CDI on August 7, 2020 related to the professional component of ENT procedures. Relator's counsel previously responded to many of these arguments, and

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however, only focuses on a narrow subset of a much larger problem. Defendant's April 15, 2022 Letter only addresses USC Care's inappropriate use of the CPT 95940 IONM time code—a code reserved for instances when the physician is physically present in the operating room providing one-on-one exclusive patient monitoring. (Ltr. 2.) This disclosure, of course, follows previous (now proven inaccurate) representations by USC Care that the 95940 code “was rarely, if ever, used” by its physicians, (Mar. 27, 2020 Ltr. 10–11), as well as its assertions that Dr. Cheongsiatmoy's other allegations about inadequate documentation and improper billing were not substantiated, (*Id.* at 15).

According to USC Care's 2021 investigation, its physicians billed the 95940 CPT code in combination with remote-monitoring codes for the same procedure. (Ltr. 3–4.) In so doing, USC physicians failed to appropriately document time purportedly spent monitoring the procedure in-person. (*Id.* 4.) According to USC Care, in 96% of the sample claims USC Care reviewed, there was no documentation in the file supporting any claim that the physician spent *any* time providing in-person monitoring. (*Id.* 5.) As a result, USC Care now admits FCA liability and offers to pay back \$457,478.16 related to 3,657 claims to Medicare, Medi-Cal, commercial plans, and other government programs. (*Id.* 9–12.) Representations from Defendant's April 15, 2022 letter that the combination billing was “random”, (Ltr. 7, 11), will be proven inaccurate in litigation as this directly contradicts the instructions from USC's billing and compliance team. Relator intends to highlight, in discovery and litigation, the true extent to which USC's highest level of management orchestrated the fraud.

Similar to USC Care's previous admissions, however, this latest letter only addresses IONM services provided at USC Keck Hospital (“Keck”), and it does not address the services billed under USC physicians at USC+Los Angeles County Medical Center (“L.A. County MC”). This glaring deficiency ignores substantial and detailed allegations in the Fourth Amended Complaint (4AC) that must be substantiated through litigation. (*See, e.g.*, 4AC ¶ 194.)

The disclosures USC Care has made from the interviews of Drs. Gonzalez and Shilian pose more questions than answers as to the scope of USC Care's review of claims containing CPT code 95940. Defendant states “Dr. Gonzalez was not specifically interviewed about his 1,971 CPT Code 95940 claims because he left the IONM Program in July 2019 when his USC faculty contract was not renewed based on his responsibility for incorrect IONM claims...” (Ltr at 6.) Defendant misrepresents Dr. Gonzalez's date of departure from USC as July 2019 in contradiction to Defendant's previous representations that, “As a result of Dr. Gonzalez's handling of the IONM billing in these cases, his employment contract will not be renewed and his employment [with USC] will end in June 2020.” (Mar. 27, 2020 Ltr. 2.) USC had six years to interview Dr. Gonzalez about the CPT 95940 fraud following his failed July 2014 audit. Worse yet, in the two years following Dr. Cheongsiatmoy's internal reporting to USC managing agents, Defendant instead promoted Dr. Shilian to USC IONM Division Chief and Dr. Gonzalez to a leadership position on the USC Faculty Council as a primary advisor to the USC Keck Dean. Finally, Defendant's

additionally elaborated on his allegations, in correspondence and memorandum to the Government, including but not limited to those dated April 30, 2020, February 17, 2021, March 1, 2021, and June 3, 2021. Relator incorporates these communications by reference to this letter.

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characterization that the billing issues had not been identified by USC or Dr. Cheongsiatmoy prior to the Fall 2018 interview of Dr. Gonzalez is patently false and not supported by the evidence and exhibits contained within the Fourth Amended Complaint.

Further, it is unclear from the face of the April 15, 2022 letter and its accompanying exhibits whether the 3,661 claims represent the total claims submitted for services provided at Keck containing CPT code 95940 during the identified time period as implied, or whether they represent a more limited subset of claims discussed in USC Care's letter wherein physicians billed for both remote real-time monitoring and in-person monitoring for the same procedure (referred to here as "combination billing"). This ambiguity is created from the discussions on, for example, page 5, describing the sample population USC Care used for its audit, which included only claims containing both 95940 and 95941 CPT codes. (Ltr. 5; *see also id.* 3.) This ambiguity raises significant questions given Relator's detailed allegations that USC Care used CPT code 95940 to bill for procedures associated with concurrent surgeries at two different hospitals (Keck and L.A. County MC) (and not simply in combination billing scenarios). (*See, e.g.*, 4AC ¶¶ 193–94.)

Relator also cannot readily discern from the face of the letter whether these claims are limited to IONM services provided specifically for ENT procedures. The letter does not expressly declare such a limitation, but the only procedure-type specifically discussed is ENT. (Ltr. 5.) USC Care's previous disclosures have limited its review to ENT procedures for other fraud theories (*see* Mar. 27, 2020 Ltr.), and it is unclear whether it does so here when USC's IONM Program specifically includes the technologists, neurologists and surgeons associated with neurosurgery, spine, orthopedic and ENT surgeries at both USC Keck Hospital and L.A. County MC. (*See* 4AC Ex. 7)

It further appears that USC Care is only calculating professional component damages, and that Defendants do not seek to repay reimbursements received from the underlying modalities, the technical components, and the false claims associated with the DRG billed by the hospitals. Relator seeks to recover these and other associated fraudulent reimbursements on behalf of the taxpayers.

USC Care likely seeks credit for these repayments so to avoid paying treble damages and/or fines. But these offers of repayments came more than three years after Relator blew the whistle on Defendants and initiated this lawsuit, alerting the Government to USC's fraudulent schemes. These repayments are not offered voluntarily as Defendant's disclosures and offers to repay false claims associated with CPT 95940 (\$75,949 to Medicare, Medi-Cal or other government programs and \$297,778 to commercial plans) were made in 2022, three years following the initiation of the government inquiry and following the partial lifting of the seal. USC Care's disclosures are further incomplete as further explained below. Therefore, USC Care should not be given any credit for offers of repayment at this late stage, and Relator will continue to seek multiplies and penalties in litigation.

FRAUD LEFT UNADDRESSED BY DEFENDANTS

USC Care's original March 27, 2020 disclosure to OIG HHS and its more recent April 15, 2022 supplemental disclosure are based upon an incomplete and insufficient investigation. Worse yet,

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these disclosures were made by only one of the two defendants and only partially address a small fraction of the fraud Relator reported; these unresolved issues will be addressed in litigation.

Group Billing Scheme

Many of the schemes Relator identifies in his Fourth Amended Complaint (4AC) are the result of USC's group-billing practice. As Defendant admitted in its March 27, 2020 Letter to OIG HHS, USC assigned only one physician to actually monitor all IONM cases on a given day, even though that physician did not continuously monitor the cases as required by billing and coding rules. It then subsequently determined which physicians would submit claims for which procedures *after-the-fact*. In other words, claims were submitted by a physician who did not actually perform a given procedure; rather, USC subsequently distributed and assigned claims to physicians based upon patients' insurance status and the CPT codes accepted by those payers. This malicious scheme allowed Defendants to repeatedly maximize financial reimbursement from any set of potential CPT codes it could submit at a given time. This scheme was orchestrated by the highest levels of USC management and not limited to the two physicians USC Care seeks to blame in its letter. It was USC's sanctioned policy. (4AC ¶¶ 158–63.)

Failure to Continuously Monitor Procedures:

The IONM process requires *continuous* monitoring of a procedure. Relator presents ample allegations, citing actual IONM data and chat logs, to demonstrate that USC's physicians routinely failed to continuously monitor procedures, and in some cases, physicians did not submit *any* documented evidence of monitoring at all, much less continuous monitoring. (*See, e.g.*, 4AC ¶¶ 205–11, 257–96, 338–55.) This occurred with work purportedly performed at both Keck Hospital and L.A. County MC. The fact that physicians did not continuously monitor means that technologists often stepped in and interpreted IONM data—the physician's responsibility. In so doing, USC technologists engaged in the unauthorized practice of medicine at both USC Keck hospital and L.A. County MC. (*Id.* ¶¶ 207–11; 255–95.)

Submitting claims for reimbursement for IONM services that did not involve continuous monitoring is not a mere technical misrepresentation. Such failure can, and ultimately did, lead to significant patient harm and permanent injury. (*See, e.g., id.* ¶ 324.) This is, after all, the purpose of IONM monitoring—to catch issues as they arise and in time to prevent or minimize complications.

Claims submitted for IONM services that did not involve continuous monitoring are false. This is not only true for reimbursements relating to CPT time codes for IONM, but it is also true of the reimbursements received in connection with base modalities, the DRG, and technical components billed by the hospitals for those services.

False Claims for Concurrent Surgical Procedures

IONM CPT time codes 95940, 95920, and G0453 require dedicated monitoring for reimbursement. USC management knew that IONM and surgical procedures were being billed under the same neurologists and surgeons for surgeries occurring concurrently at two different hospitals. Yet, USC knowingly submitted thousands of false claims using the exclusive IONM CPT code 95940

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associated with surgeries at L.A. County MC despite the fact that USC also knowingly submitted false IONM claims under the very same physician for concurrent surgeries taking place at USC Keck hospital; therefore, all associated claims for all concurrent surgeries are also false.

This pattern of practice occurred with surgeries performed at the same time at both hospitals and extended to all physicians who were part of the IONM Program, which USC admits included neurologists, neurosurgeons, orthopedic surgeons, and ENT surgeons. (*See* 4AC Ex. 7.) Relator's Fourth Amended Complaint (4AC) is replete with examples of concurrent billing for procedures under the same physician occurring at the same time at two different hospitals (Keck and L.A. County MC). Dr. Cheongsiatmoy is prepared to demonstrate the true extent of this fraud through the hospital records he intends to obtain through discovery. (*See, e.g.*, 4AC ¶¶ 193–95, 207–10, 218.)

Procedures Performed by ACGME Residents Where Teaching Physicians Were Not Present

Even more alarming still, Relator's Fourth Amended Complaint further provides significant examples of numerous procedures performed by ACGME resident surgeons without the presence of a teaching physician (either entirely or during critical points in the procedure) in direct contravention of Medicare regulations. (*See, e.g., id.* ¶¶ 219; 299; 305; 306–322; 323; 324–25.) This routine practice led to significant patient harm. For example, in one instance, a teaching surgeon left a resident unsupervised at L.A. County MC to perform another procedure occurring simultaneously at Keck *during* the brain surgery he was supposed to be supervising at L.A. County MC. (*Id.* ¶ 324.) The patient suffered paralysis, and Defendants still caused multiple submissions of false claims relating to it, including but not limited to false claims associated with IONM and MS-DRG 025: Craniotomy and endovascular intracranial procedures. (*See* 4AC Ex. 42) Formal discovery of the hospital records from the actual surgeries will uncover the true extent of this deadly and unlawful practice.

Violations of the AKS and Stark Law

Relator further articulated his theory of the AKS/Stark claims in his June 3, 2021 correspondence with the Federal Government and incorporates that correspondence hereto by reference. In essence, Relator's AKS/Stark-predicated FCA claims address Defendants payments to neurologists Gonzalez and Shillian and surgeons. As to the neurologists, USC compensated Gonzalez and Shillian in part using variable incentive pay and overloads that were not commercially reasonable because they related to procedures where these particular physicians did not actually perform the IONM services because Defendants' group billing scheme. As to surgeons, Defendants engaged surgeons to increase surgical volume, including IONM services, to increase revenue. Defendants provided these surgeons with total compensation above fair market value with commercially unreasonable compensation arrangements. With these, Defendants intended to induce referrals for IONM monitoring. After Relator's disclosures were sent to all four participating government entities (U.S. Attorney Tracy Wilkison and AUSA Frank Kortum for the United States, DAG John Fisher and CDI Attorney Mitch Neumeister for the State of California and Bureau Director Marc Beaart for Los Angeles County), all government entities stipulated or were deemed by the Court to have stipulated to the filing of the Third Amended Complaint (TAC) and Fourth Amended Complaint (4AC) containing the AKS/Stark Claims. *See* ECF 68 and 87.

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Misrepresentation of Provider

USC Care has already admitted to submitting false claims relating to Drs. Gonzalez and Shilian during their academic research days from January 1, 2014 until July 1, 2019 for procedures purportedly performed at Keck. (Mar. 27, 2020 Ltr.) Of course, there is no reason to limit this inquiry to the artificial time period USC Care selected or to procedures purportedly performed only at Keck. As explained in the April 30, 2020 memorandum from Relator's counsel, the global billing scheme caused false claims every day of the week relating to procedures purportedly monitored at both hospitals. (*See also* 4AC ¶¶ 225, 232.) Further, any repayments associated with the unlawful billing on Drs. Gonzalez and Shilian's academic research dates should also include repayment on base modalities and the technical components and DRGs billed by the hospital

Claims Submitted When Remote Monitoring Not Possible

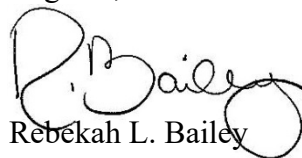
Similarly, USC Care has already admitted to submitting false claims using CPT Code 95941 from January 1, 2014 until July 1, 2019 for ENT procedures performed at Keck. (Mar. 27, 2020 Ltr.) Again, the time period USC Care selected for its review is arbitrarily narrow. Further, Relator alleged the same machine that made it impossible to remotely monitor ENT procedures, the NIM machine, was used at L.A. County MC in addition to USC Keck hospital. (4AC ¶ 238.) Repayments related to these unlawful claims should also include reimbursement for base modalities, including the technical components and false claims associated with the DRG billed by the hospitals.

RELATOR'S INTENT TO VIGOROUSLY PROSECUTE THIS CASE ON BEHALF OF TAXPAYERS

Relator is committed to vigorously prosecuting the above theories on behalf of the taxpayers. At the appropriate time, Relator will seek his share of the monies recovered since the initiation of this action, including reasonable attorneys' fees and litigation expenses.

To date, no government agency has intervened, demonstrated good cause for intervention, or communicated an intent to intervene. As such, any communications about potential settlements should continue to include Relator's counsel. Relator has and continues to commit substantial time and resources into exposing the true extent of Defendants' fraud and holding them accountable for their wrongdoing.

Regards,



Rebekah L. Bailey

Encl.: March 27, 2020 Letter to OIG HHS
April 15, 2022 Letter to DOJ, CA, CDI

cc: Tracy Wilkison, U.S. Attorney, C.D. Cal
Susan Gillin, Branch Chief, U.S. Department of Health & Human Services, OIG HHS

United States ex rel. Cheongsiatmoy v. Univ. of S. Cal.

No.: CV 18-08311-FWS-AS

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Tom Morris, Senior Trial Counsel, U.S. Department of Justice

Rohith Srinivas, Senior Trial Counsel, U.S. Department of Justice

Marc Beaart, Bureau Director, Los Angeles County Fraud & Corruption Prosecution

Steve Frankland, Head Deputy, Los Angeles County Healthcare Fraud Division

John Fisher, Deputy Attorney General, California Department of Justice

Mitch Neumeister, California Department of Insurance, False Claims attorney

Alice Chang, Esq.

Matt Morgan, Esq.

Chloe Raimey, Esq.

Exhibit B

										STEP 1		STEP 2		STEP 3		STEP 4							
										SNR		SNR		EMF Update		SNR							
										TT		Select (X:45)		"round up"		TT(X:45)							
										Total Time"		95941 Time"		95941 Units		95940 Time"		Minutes		95940 Units		Inflated Time"	
Exemplar	Exhibit #	MD	Date	LOS	Last Name	First Name	MRN	Start	Stop	8:25	17:25	9:00	6:45	7	2:15	135	9	9:15					
	1	Gonzalez	05/10/16	USC Keck	M			8:30	15:15	6:45	4:45	5	2:00	120	8	7:00							
	2	Gonzalez	05/10/16	USC Keck				8:00	10:30	2:30	1:45	2	0:45	45	3	2:45							
	3	Gonzalez	05/10/16	USC Keck		M		8:30	14:00	5:30	3:45	4	1:45	105	7	5:45							
	4	Gonzalez	05/13/16	USC Keck	M			9:30	11:45	2:15	0:45	1	1:30	90	6	2:30							
	5	Gonzalez	05/18/16	USC Keck				8:45	11:15	2:30	1:45	2	0:45	45	3	2:45							
	6	Gonzalez	05/18/16	USC Keck	S			8:15	14:00	5:45	3:45	4	2:00	120	8	6:00							
	7	Gonzalez	05/19/16	USC Keck	T			10:00	12:00	2:00	0:45	1	1:15	75	5	2:15							
	8	Gonzalez	05/19/16	USC Keck	V			8:30	10:15	1:45	0:45	1	1:00	60	4	2:00							
	9	Gonzalez	05/19/16	USC Keck	M			11:15	12:45	1:30	0:45	1	0:45	45	3	1:45							
	10	Gonzalez	05/24/16	USC Keck	C	J		13:45	16:15	2:30	0:45	1	1:45	105	7	2:45							
	11	Gonzalez	05/25/16	USC Keck	M			8:00	13:30	5:30	3:45	4	1:45	105	7	5:45							
	12	Gonzalez	05/27/16	USC Keck	S	L		17:30	19:30	2:00	0:45	1	1:15	75	5	2:15							
	13	Gonzalez	05/27/16	USC Keck	V			13:45	16:30	2:45	1:45	2	1:00	60	4	3:00							
	14	Gonzalez	05/31/16	USC Keck	M			12:15	16:15	4:00	2:45	3	1:15	75	5	4:15							
	15	Gonzalez	05/31/16	USC Keck	M			8:30	12:00	3:30	1:45	2	1:45	105	7	3:45							
	16	Gonzalez	05/31/16	USC Keck	M			8:45	14:00	5:15	3:45	4	1:30	90	6	5:30							
	17	Gonzalez	05/31/16	USC Keck	M	D		8:00	11:45	3:45	2:45	3	1:00	60	4	4:00							
	18	Gonzalez	06/07/16	USC Keck	M	M		8:00	13:45	5:45	4:45	5	1:00	60	4	6:00							
	19	Gonzalez	06/08/16	USC Keck	R			9:30	11:45	2:15	0:45	1	1:30	90	6	2:30							
	20	Gonzalez	06/08/16	USC Keck	V	N		8:00	12:30	4:30	2:45	3	1:45	105	7	4:45							
	21	Gonzalez	06/08/16	USC Keck	V			8:30	12:45	4:15	2:45	3	1:30	90	6	4:30							
	22	Gonzalez	06/08/16	USC Keck	Be			8:30	16:00	7:30	4:45	5	2:45	165	11	7:45							
	23	Gonzalez	06/15/16	USC Keck	C			7:45	11:30	3:45	2:45	3	1:00	60	4	4:00							
	24	Gonzalez	06/15/16	USC Keck	B			8:45	11:30	2:45	1:45	2	1:00	60	4	3:00							
	25	Gonzalez	06/17/16	USC Keck	L	Jc		9:45	13:45	4:00	1:45	2	2:15	135	9	4:15							
	26	Shilian	04/07/16	USC Keck	B			10:45	13:30	2:45	1:45	2	1:00	60	4	3:00							
	27	Shilian	04/18/16	USC Keck	C			8:30	12:30	4:00	2:45	3	1:15	75	5	4:15							
	28	Shilian	04/19/16	USC Keck	S			7:45	10:15	2:30	1:45</												

Exhibit C

PHILLIPS & COHEN LLP

ATTORNEYS AT LAW

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February 17, 2021

Stephen S. Hasegawa
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Via Electronic Mail

Frank Kortum, Assistant United States Attorney
Frank.Kortum@usdoj.gov
U.S. Attorney's Office for the Central District of California
Federal Building, Suite 7516
300 N. Los Angeles St.
Los Angeles, California 90012

Re: ***United States, et al., ex rel. IONM LLC v. University of Southern California,***
Case No. CV 18-08311 ODW (AS)

Dear Frank:

The *qui tam* plaintiff in the above matter, IONM LLC, has asked me to serve as co-counsel alongside Alice Chang in the above-referenced case. I look forward to the opportunity to work with you on this matter.

Alice and I understand that the United States plans to have communications with defendant USC Care in the near future to discuss potential settlement in light of USC Care's March 27, 2020 self-disclosure and admission of wrongdoing (the "March 27, 2020 Letter"). We write now to identify several issues that we think should be resolved to enable the United States to determine what recovery is necessary to make it whole.

One issue that we believe may frame this discussion is USC Care likely will demand that any settlement include a release for all misconduct alleged in Relator's complaint. Our understanding is that DOJ's long-standing practice is to grant releases in FCA actions only for conduct for which the defendant makes payment in a settlement agreement. Additionally, we understand that USC seeks self-disclosure credit, which necessarily requires both completeness and candor. We believe that, before any settlement or determination of self-disclosure credit,

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USC Care must acknowledge and redress misconduct that is not addressed in its self-disclosure to OIG.

We hope to discuss the below issues with you before any discussions with USC Care. Some of these are straightforward issues where USC Care's acknowledgement of wrongdoing implicates additional claims that USC has excluded from its self-disclosure without explanation. Others are instances where USC Care's self-disclosure either fails to address categories of misconduct or raises troubling issues casting doubt upon the candor and completeness of its self-disclosure.

In light of these issues, we believe that the best approach in the upcoming discussion with USC Care is to listen to its proposal, then ask about the following issues. We think it will be valuable for the Government to determine whether USC Care is willing to voluntarily provide additional information, or in the alternative, whether further information is necessary to enable the United States to make a proposal that will make it whole for both USC Care's acknowledged misconduct and the additional matters that Relator has identified. If, after hearing USC Care's proposal, the United States wishes to make a counterproposal, we would be happy to offer our time and resources in helping develop an appropriate response.

We believe the following issues warrant discussion with USC Care.

1. ENT claims for procedures at Keck Hospital prior to 2014

USC Care's letter to OIG acknowledges that USC Care "incorrectly billed IONM physician services provided during otolaryngology ('ENT') surgeries because the monitors in the ENT operating rooms lacked the required technical capability" to satisfy requirements for remote billing under HCPCS Code G0453 and CPT Code 95941. That is, USC Care admits that it should never have submitted any Medicare claims for IONM services rendered during ENT surgeries under those CPT and HCPCS codes.

HCPCS Code G0453 and CPT Code 95941 were introduced on January 1, 2013. According to Local Coverage Determinations, the applicable code in effect prior to that date, CPT Code 95920, similarly required "physical or electronic capacity for real-time communication with the supervising physician," within certain technical specifications (including mandatory 16-channel monitoring and minimum real-time auditory connection) and "undivided attention to a unique patient during the critical part of the surgery." Accordingly, all of USC Care's claims for IONM services in its ENT operating rooms prior to 2014 would be invalid for identical reasons.

USC Care, however, has only identified and calculated the ENT claims it submitted to the United States for services provided from January 1, 2014 through July 1, 2019. As set forth in Relator's complaint, USC Care has been performing IONM services for ENT surgeries since as early as 2008.

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USC Care accordingly should identify and calculate the value of its claims for IONM services billed to the United States or to Medi-Cal for ENT surgeries before January 1, 2014 and reimburse the United States for those claims.

2. Claims for procedures occurring on days when billing physicians did not personally provide continuous monitoring and interpretation of neurophysiological data

USC Care acknowledges that “its IONM claims for Drs. Gonzalez’s and Shilian’s professional time component charges on their ‘academic research’ days should not have been billed to Federal Programs because these physicians did not personally provide such services.” Nonetheless, USC Care has only identified and calculated the value of claims submitted on the billing physicians’ academic research days beginning in 2016. *See* March 27, 2020 letter at 15. USC Care should identify and calculate the value of IONM claims submitted to the United States or Medi-Cal for days prior to 2016 on the billing physicians’ academic research days. As set forth in the Relator’s FAC, the Chair of Neurology, Dr. Chui set the academic-day policy in 2011, when Dr. Shilian joined the practice.

USC Care’s submission of claims for days in which its “physicians did not personally provide” the billed services is not limited to academic research days. USC Care also submitted claims for physician services on days when the billing physicians were not working at all. For example, as detailed in Relator’s complaint, USC Care billed Medicare for 33 units of HCPCS Code G0453 on August 15, 2017, listing Dr. Shilian as the rendering provider. Dr. Shilian could not have performed any services on that day, because she was on vacation in Italy. USC Care should identify and calculate the value of all IONM claims, both professional and technical components, submitted to the United States or Medi-Cal for cases which the billing physician did not monitor continuously, including on days when the billing physician was on vacation or absent (even intermittently) from the control room.

In addition, Relator has identified numerous instances other than ENT surgeries and academic-research days in which USC Care physicians were not continuously monitoring surgeries, including instances in which they were not responsive to technologist queries at all. For example:

- On June 12, 2014, the chat log for one spine surgery procedure indicates that a physician using the identifier D-104182 told the technologist to “Text me if changes. Will be in a meeting,” thus acknowledging that he was not continuously monitoring the case. Dr. Gonzalez attested to having monitored this surgery.
- On Feb 25, 2015, the chat log for one procedure indicates that a physician using the identifier KHV-CTXAPP05 told the technologist, “I will be watching intermitently [*sic*]. Text me if issues,” thus acknowledging that the physician was not continuously monitoring the case.

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- On March 4, 2015, the chat log for one procedure indicates that a physician using the identifier KHV-CTXAPP05 was not monitoring the procedure continuously. After the physician indicated that he or she did not even know what procedure was being performed (“what case is this? ... what surgery? surgeon?”), the technologist tried three times to reach the physician concerning a change in signals: [11:45:01] “are u there”; [11:47:01] “left biceps response dropped in amplitude”; [13:07:04] “EMG activity on right and MEP’s decrease in amp right hand and tricep, surg informed.” Despite this, the physician did not respond, indicating that the physician was not continuously monitoring the surgery or interpreting the neurophysiological data.
- On August 4, 2015, the chat log for one procedure indicates that the technologist tried to reach the purportedly supervising physician, Dr. Shilian, three times. In the first communication, the technologist wrote, “Dr. Shilian?” In the second, two minutes later, the technologist wrote, “Are you there?” In the third, another two minutes later, the technologist wrote again, “Are you there?” The technologist was reaching out because the patient’s neurological signals were changing and needed interpretation. The chat log shows that Dr. Shilian never responded. That is, the patient never received the benefit of supposed continuous real-time IONM monitoring. Nonetheless, USC Care billed Medicare for IONM services for the procedure.
- On April 22, 2016, the chat log for one procedure indicates that Dr. Gonzalez told a technologist to: “text me if any changes,” indicating that he was not continuously monitoring the case. Dr. Gonzalez never came back online to communicate any interpretations to the technologist. Absent documentation showing communications otherwise, USC Care should not have billed Medicare for IONM services for this procedure.

As USC Care acknowledges, it may only bill for procedures in which its physicians are continuously monitoring the surgery and interpreting neurophysiological data. While these chat logs are not exclusively related to Medicare claims, they present a troubling pattern of violations of the continuous-monitoring requirement and demonstrate that those problems are not limited to ENT surgeries or days in which its physicians were out of the control room entirely.¹ Moreover,

¹ The chat logs also may identify instances in which the billing provider did not actually monitor and continuously interpret data. As USC Care acknowledges, its physicians cannot bill for fellows’ monitoring services under their general supervision unless they are both physically present in the control room to supervise the fellow and include the proper GC modifier. March 27, 2020 Letter at 2; *id.* at 8-9, FN 4. Comparison of the chat logs with USC Care’s claims that do not include a GC modifier accordingly may identify instances in which USC Care improperly billed fellows’ services, as reflected by their identifying code, as if they were actually performed by a USC Care physician.

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the harm caused in these examples is not limited to billing fraud. They demonstrate that USC Care's disregard of Medicare and Medi-Cal requirements for IONM services put patients at risk by depriving them of the continuous monitoring they were promised, even to the extent, as set forth in some of the examples above, of the responsible IONM physician being unresponsive to queries from the technologist concerning changes in neurophysiological signals.

Because USC Care seeks self-disclosure credit, its failure to investigate the submission of claims on days when the billing physicians either were on vacation or were not continuously available to monitor—or even to consult—is significant. USC contends that it lacked specific intent to defraud the Government (though it acknowledges that its conduct is sufficient to establish “knowledge,” as that term is defined by the False Claims Act) because its physicians sincerely, but mistakenly, believed that they could bill for services when they were not present, as long as they were immediately available for consultation. March 27, 2020 Letter at 14. But USC Care's documented instances of claims when the billing physicians were completely unavailable, either because they were on vacation or because they were simply not responsive to technologists' queries, refutes any assertion of sincere mistake and contradicts USC Care's root-cause analysis.

At a minimum, we believe the United States should ask USC Care why it did not review chat logs to identify additional instances in which its physicians did not continuously monitor and interpret neurophysiological data, beyond ENT surgeries and academic research days. USC Care is likely to say that it does not have possession of comprehensive chat logs for the IONM services it billed. But that leads to another series of important questions. First, even if USC Care lacked complete chat logs, why didn't it review extant ones? Second, why did USC Care repeatedly instruct personnel to “stop saving chat logs” and to delete chat logs from patients' medical records, as detailed in the Complaint and Exhibits 8 and 9 thereto? Third, why didn't USC Care address that question in its internal investigation and self-disclosure? We believe USC Care's answers to these questions are critical to evaluating the both the completeness and the candor of its self-disclosure.

3. Claims for base code/modalities and the technical component of services that should not have been billed

USC Care acknowledges that it should never have billed the United States or Medi-Cal for IONM services during surgeries where it did not have the requisite technical capabilities (*i.e.*, ENT surgeries) or where its billing physicians did not actually perform the services billed (*i.e.*, academic research days, but presumably also vacation days and instances in which the billing physician did not continuously monitor and interpret neurophysiological data).

USC Care, however, has calculated the Government's damages as only the professional time component of those services. USC Care also was compensated for the professional base code/modalities attendant to the service (*i.e.*, the professional component other than the time component). In addition, USC-Keck Hospital and, as set forth below, LAC+USC were also compensated for those services, either by billing the technical base code/modalities and time

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components of those services, or as part of the applicable DRG. Since the IONM services were not rendered in compliance with applicable billing requirements, the United States and Medi-Cal should not have paid any component of those services. USC Care's conduct accordingly caused USC-Keck Hospital (and LAC+USC) to submit false claims.

USC Care accordingly is liable not merely for the professional time component of the false claims at issue, but also the professional base code/modality component for which it was reimbursed and the hospitals' claims for the technical component. Any settlement that releases USC Care from its liability for submitting or causing the submission of false claims those components of its IONM services necessarily requires that USC Care pay for those harms as well. We recommend that the United States ask USC Care if it has a proposal to calculate that portion of its liability. If USC Care does not, we would be happy to help the United States estimate the value of these damages.

4. Claims for IONM monitoring of procedures occurring at LAC+USC

USC Care's internal investigation and self-disclosure appear to cover only claims for procedures occurring at Keck Hospital-USC. Relator's complaint, however, identifies numerous instances of misconduct relating to IONM monitoring of procedures occurring at Los Angeles County Medical Center, now known as LAC+USC.

We assume that USC Care will not dispute that claims submitted to the United States or to Medi-Cal for IONM services for procedures performed at LAC+USC were false if they reflect services performed on the billing physicians' academic research days, during ENT surgeries performed at LAC+USC (if any), or during surgeries performed at LAC+USC when the billing physicians were on vacation. USC Care accordingly should identify and calculate the value of those false claims, or explain why it believes this is not true. Likewise, USC Care should review chat logs to identify surgeries performed at LAC+USC in which the supervising physician did not actually continuously monitor the surgery or was unresponsive to queries from technologists.

5. Claims for in-person monitoring (CPT Code 95940) for surgeries simultaneous with other claims for remote or in-person monitoring

As USC Care's self-disclosure acknowledges, CPT Code 95940 requires that the rendering physician be "physically present inside the operating room and providing one-on-one patient monitoring. ... Thus, no other cases may be monitored during the same time period." March 27, 2020 Letter at 10.

In the FAC, Relator identified several instances in which USC Care billed for a physician's in-person monitoring of a surgery occurring simultaneously with other surgeries for which the same physician billed for either in-person or remote IONM monitoring. For example:

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- USC Care submitted claims for Dr. Gonzalez's in-person monitoring (CPT Code 95940) of two simultaneous surgeries occurring in two separate operating rooms at LAC+USC on December 1, 2017. One of those surgeries began at 10:30 a.m. and ended at 2:15 p.m.; the other began at 11:00 a.m. and ended at 4:15 p.m. On the same day, USC Care submitted claims for Dr. Gonzalez's remote monitoring of two surgeries at USC-Keck Hospital, one from 10:23 a.m. to 7:06 p.m. and another from 2:46 p.m. to 2:27 a.m. the following day. Since, as USC Care acknowledges, "no other cases may be monitored during the same time period" as a surgery billed under CPT Code 95940, at least two of these surgeries, and possibly all four, should not have been billed.
- USC Care submitted a claim for Dr. Shilian's in-person monitoring (29 units of CPT Code 95940, or 7.25 hours) of a surgery at USC-Keck on April 3, 2017, from 8:52 a.m. to 8:55 p.m. Operating room records confirm Dr. Shilian's presence at that surgery. USC Care also submitted a claim for Dr. Shilian's in-person monitoring (12 units of CPT Code 95940, or 3 hours) of a surgery at USC+LAC on the same day. Operating room records show the presence of the technologist, but not Dr. Shilian.

Since the vast majority of patients at LAC+USC are insured through Medi-Cal, the existence of these practices is relevant to USC's self-disclosure for two reasons.

First, USC Care's self-disclosure does not indicate any attempt to review its claims to identify instances of improper simultaneous billing. If USC Care seeks credit for its candor in self-disclosing misconduct, it should review its own records and identify instances of improper billing to Medicare or Medi-Cal of simultaneous procedures using CPT Code 95940 or HCPCS Code G-0453, both of which require undivided attention to a single surgery. USC Care should investigate any instance in which a physician billed any services in addition to in-person monitoring on a given day, or it may produce to the United States records from which the Government may investigate those instances.

Second, USC Care's self-disclosure contains no explanation for why any physician believed it was appropriate to bill simultaneous in-person procedures or remote procedures occurring at the same time as any in-person procedures. USC Care does not suggest that any of its physicians misunderstood CPT Code 95940's requirements that the physician be continuously physically present in the operating room (as appears not to have been the case in the April 3, 2017 example above) or that those physicians could not simultaneously monitor other cases (as it claims Dr. Gonzalez did in the December 1, 2017 example above). These examples appear to contradict USC Care's representation that it and Dr. Gonzalez had no specific intent to commit fraud. If USC Care seeks credit for its candor, it should investigate and explain this conduct.

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6. Claims for in-person monitoring of surgeries (CPT Code 95940) at USC+LAC

The December 1, 2017 example described in Section 5 above also illustrates a systemic problem with USC Care's billing of IONM monitoring for procedures at LAC+USC. Relator believes (as alleged at paragraphs 77-78 of the FAC) that USC Care instructed its technologists to bill all claims for IONM monitoring at LAC+USC as in-person monitoring (CPT Code 95940), despite the fact that the physicians did not actually attend those surgeries in person.

USC Care could confirm, relatively easily, whether instances of billing under CPT Code 95940 were appropriate by examining operating room records (which should identify all physicians in attendance). If these records confirm that USC Care was billing for in-person services when the physician was not present, USC Care should acknowledge this false billing and compensate the United States and Medi-Cal for all components of IONM services on these surgeries billed to those entities. In addition, we note that these errors, which USC Care cannot claim resulted from a misunderstanding of the "remote" or "nearby" language in other CPT or HCPCS codes, would contradict USC Care's assertion that its billing errors were sincere mistakes.

7. Group Billing

USC Care's self-disclosure alludes to, but downplays, a serious systemic problem with its billing practices. It explains:

As an example of billing division between the IONM physicians, if there were ten total cases in a day, seven of which were private insurance cases, and three of which were Medicare cases (with two that overlapped in terms of timing), one physician (the person acting as the primary biller for that day) would bill for the seven private pay cases, one physician would bill for the two Medicare cases that did not overlap, and one physician would bill for the last Medicare case.

March 27, 2020 Letter at 8-9, FN 4. This explanation corroborates the description in Relator's complaint of USC Care's long-standing group billing policy, memorialized in a September 25, 2018 memorandum from Dr. Helena Chang Chui, USC Care's Chair of Neurology, which stated that only "One attending physician (Primary billing physician) will be given the responsibility to monitor all the cases, and pair cases with other physicians (pool physician) for billing purposes." FAC, ¶ 156.

While this arrangement would be permissible as a method of assigning actual monitoring responsibility for surgeries *ex ante*, it is wholly improper as a method for assigning billing responsibility for surgeries *ex post*. The requirement that HCPCS Code G-0453 "can be billed only for undivided attention by the monitoring physician to a single beneficiary, not for the monitoring of multiple beneficiaries simultaneously," see 78 Fed. Reg. 74230 at 74305 (Dec. 10, 2013), is satisfied only if the billing physician actually devoted his or her undivided attention to

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the single beneficiary. It is not satisfied if the billing physician actually divided his or her attention among multiple simultaneous surgeries, even if he or she declined to bill for those other surgeries or delegated billing responsibility for them to others.

Accordingly, USC Care's apparent acknowledgement, in its description of its group billing practices, that it assigned billing responsibility for Medicare cases retroactively to maximize its revenue from those cases without regard to whether its physicians actually met the "undivided attention" requirement of HCPCS Code G-0453, is a troubling admission.

We accordingly strongly recommend asking USC Care the following questions about its group billing practices:

- Were billing responsibilities within the IONM group assigned according to who performed the actual monitoring in each case, or were they assigned in whatever manner maximized USC Care's billing?
- Who assigned billing responsibilities within the IONM group? Is it true that Dr. Chui's administrative assistant identified the insurance status for the physicians to bill only after the case had been completed? How did that person decide to whom to assign responsibility after the fact?
- On whose authority were those decisions made? Dr. Chui? If so, did USC Care investigate Dr. Chui's role in potential billing fraud, and what did it find?
- Did assignment of Medicare cases to billing physicians reflect an actual determination that those physicians actually devoted their "undivided attention" to monitoring and interpreting neurophysiological data from only the patient whose surgery was being billed?
- During surgeries for which IONM physicians billed Medicare under HCPCS Code G-0453, did those physicians ever supervise fellows or participate in monitoring of other surgeries from the control room? Did they do occasionally, regularly, or always?
- At the time of the surgeries for which USC Care billed Medicare for IONM services, did the billing physicians know which surgeries they were responsible for monitoring? Did they know, at the time of those surgeries, that they were required to devote their undivided attention to those surgeries? Or did they only learn after the surgeries were completed which surgeries they were required to certify had their undivided attention?
- Did USC Care consider these issues as part of its independent investigation? Why didn't it address them?

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8. Conclusion

We would welcome the opportunity to have a status call with you later this week in preparation for our upcoming meeting with USC on March 8, 2021.

Sincerely,

A handwritten signature in blue ink, appearing to read "Stephen S. Hasegawa". The signature is fluid and cursive, with the first name "Stephen" and last name "Hasegawa" clearly distinguishable.

Stephen S. Hasegawa

SSH

cc: Alice Chang, Esq.

Exhibit D

Los Angeles County + USC Medical Center
OPERATING POLICIES

DEPARTMENT:	NEUROPHYSIOLOGY	POLICY #:	9-110			
SUBJECT:	ROUTINE INTRA-OP MONITORING – SPINE	EFFECTIVE DATE:	01/01/2008			
		REVISED DATE:				
		AUTHORIZED APPROVAL:				
PERSONNEL COVERED:	NEUROPHYSIOLOGY STAFF	PAGE:	1	OF	14	

PURPOSE

To ensure the standard of practice for Intraoperative monitoring for spine procedures is maximized.

DEFINITION

Intraoperative Monitoring (IOM) is a set of tests that measure central and peripheral nervous system function during a surgical procedure. For these tests needle (or adhesive disk) electrodes are placed in the scalp, neck, and extremities for recording and stimulation. During these tests waveforms are digitally acquired and recorded. These waveforms are then monitored to assess neurological function.

POLICY

A physician's order is required prior to initiation of procedure.

EQUIPMENT

Cadwell Cascade system

GENERAL PROCEDURE

1. Always arrive at your case at least 15 minutes prior to the scheduled start time and place the computer system to allow for direct connection to the network for remote monitoring. When necessary, patient history and physical can be obtained in pre-op.
2. Before each case, you should have a good understanding of the neural pathway at risk and use the appropriate monitoring modalities to monitor that case. However, always *ASK THE SURGEON* which structures are at risk and if need, modify one of the existing protocols to include these structures. When possible always include a level above as a control, the level of interest and a level below the neural structure at risk during this particular operation. Whenever there is a doubt about what areas to monitor have the IOM supervisor or physician involved.
3. Mention to anesthesia the suggested protocol needed for optimal monitoring. If there is a question as to what to monitor please contact the IOM supervisor or physician.
4. All needle electrodes should be disposable. Placement of all needle electrodes must be done after patient induction, either during or immediately following patient intubation.
5. You must log relevant events and communications to the physicians throughout the procedure. Include relevant physiological variables (e.g. blood pressure, temperature), anesthetic agents and levels.
6. Establishing baselines;
 - A. Baseline values should be established after induction has been complete.
 - B. Baseline values should be re-established or changed as needed, for example, after exposure and when depth of anesthesia changes.

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- C. Any limitations or deficits found in the baseline data should be discussed with the IOM supervisor or physician and then the surgeons notified of any monitoring limitations.
7. When monitoring SSEPs maintain inhaled agents at 0.5 MAC up to 1.0 MAC (**See TABLE 5**). For MEPs, you need 3-4 twitches or as many needed to obtain a response. Maintain inhaled agents at 0.5 MAC or less (see table).
 8. If monitoring EMG you need at least 4 twitches. Please document either “no muscle relaxant given since induction” or number of twitches.
 9. Always contact the IOM supervisor or physician when a significant event occurs.
 10. Remove all electrodes before the patient awakes. Dispose all needle electrodes in the appropriate sharp waste containers.
 11. Place billing and reports into the neurophysiology box within 3 hours after the case.

PROCEDURE FOR LUMBAR SPINE IOM

1. For all lumbar cases, both upper and lower SSEPs are monitored. The use of TcMEPs during lumbar procedures should be discussed with the IOM supervisor or physician. Be aware that lower extremity SSEPs are not usually sensitive to lesions of individual nerve roots. Upper extremity SSEPs are useful both to identify possible upper extremity positioning changes primarily in prone positions with the arms extended, and as a control for possible systemic effects. *Needle electrodes are preferred for all stimulation and recording.*
 - A. Lower extremity stimulation- place electrodes bilaterally at the medial malleolus for posterior tibial stimulation. As an alternative, you can use stimulation at the knee around the femoral head for peroneal stimulation. Suggested parameters: Stimulus rate, 4.47Hz. Pulse duration, 200-300 microsecond.
 - B. Upper extremity stimulation- median nerve stimulation is adequate for upper extremities, however, ulnar nerve stimulation can be used for monitoring of specific prone positioning changes associated with ulnar nerve compression. Suggested parameters: Stimulus rate, 4.47Hz. Pulse duration, 200-300 microsecond.
 - C. Recording channels- all responses should include a cortical and subcortical pair, usually C3-C4, Cz-Fz, and Cs5-Fz. A peripheral recording pair should be included if there are pre-existing peripheral nerve pathologies or the procedure is likely to involve ischemia to the extremities (e.g. ALIF).
 - D. Filter settings- for cortical responses; low 30Hz, high 500Hz. For subcortical responses; low 30Hz, high 500Hz. *Do not use the 60Hz rejection filter.*
 - E. Averaging- for both upper and lower SSEPs, between 200 and 500 samples should be averaged. Do not increase unless there is a low signal to noise ratio.

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F. Timebase-Upper extremities, 50 milliseconds. Lower extremities, 100 milliseconds.

G. Waveform peaks- SSEP waveforms use N and P, respectively, to designate the polarity of the recorded signal (negative is up and positive is down);

1) Upper extremities- cortical waveforms should be marked at both N20 and P22. Subcortical waveforms should be marked at P14 and N18. If using a cervical to Fz recording pair, an N13 cervical response will be the most prominent peak. **(See TABLE 1)**

2) Lower extremities- cortical waveforms should be marked at both P37 and N45. Subcortical waveforms should be marked at P31 and N34. **(See TABLE 2)**

2. For all lumbar cases, free run EMG monitoring should be provided, even if no pedicle screw testing is done. Place paired needle electrodes in the appropriate muscles. The use of referential versus bipolar recording pairs depends on the number of surgical levels involved and specificity of the response required, but always ask the IOM supervisor or physician when necessary.

These are the preferred muscles for lumbar EMG **(See TABLE 3)**;

L1 Iliopsoas

L2-4 Vastus medialis

L4-5 Tibialis anterior

S1-2 Medial Gastrocnemius

S3-5 Anal and Urethral sphincter

3. Pedicle screw testing should be offered for all cases in which pedicle screws are placed in L1-S1. Confirm that there are 4/4 twitches. Have the IOM supervisor or physician available for testing.
- A. We supply the disposable stimulator and reference needle electrode. Do not open until requested by the surgeon.
 - B. Have the surgeon place the reference electrode in muscle within the wound.
 - C. Have the surgeon remove any fluid surrounding the screw, then they can touch the screw directly with the stimulator.
 - D. Begin at 0mA and increase at 1mA increments up to 20mA. Observe the EMG response. Do not confuse a stimulus artifact with a response. If a muscle response is seen, tell the surgeon at what stimulus threshold.
Warning Criteria:
 - 1) 0-8mA, probable pedicle wall breach.
 - 2) 8-12mA, possible breach.
 - 3) above 12mA, unlikely pedicle wall breach.
 - 4) above 20mA, definitely no breach.
 - E. To provide for a positive control, ask the surgeon to test the nerve root directly. There should be a response at 1-3mA.

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4. EMG Interpretation- For all lumbar cases, EMG monitoring should be provided. Strict clinical interpretation of significant activity should be referred to the IOM physician. However IOM personnel should communicate to the surgeon all activity that is considered significant.

Significant EMG activity includes the following (**See TABLE 4**);

- A. EMG bursts that are closely correlated with manipulation of neural structures.
- B. Onset of trains of firing at the time of manipulation of neural structures.
- C. Increase in intensity of EMG trains at the time of manipulation.
- D. Bursts of activity at the time of pedicle hole drilling.
- E. Myokymic potentials which usually signify injury to the associated nerve.

EMG activity that is not likely to be significant;

- A. Continuous low level firing uncorrelated to surgical activity.
- B. EMG activity correlated to irrigation
- C. Abnormal spontaneous activity such as fibrillations and positive waves.

PROCEDURE FOR CERVICAL AND THORACIC SPINE IOM

1. For all cervical and thoracic cases, both upper and lower SSEPs are monitored. For any case involving an unstable cervical or thoracic spine, pre-positioning baseline SSEP responses should be obtained. *Needle electrodes are preferred for all stimulation and recording.*
 - A. Lower extremity stimulation- place electrodes bilaterally at the medial malleolus for posterior tibial stimulation. As an alternative, you can use stimulation at the knee around the femoral head for peroneal stimulation.
 - B. Upper extremity stimulation- median nerve stimulation is adequate for upper extremities. Ulnar nerve monitoring should be included in cases in which there is a specific concern about lower cervical nerves, C7-C8. For high cervical cases, C1-C6, median nerve should be adequate.
 - C. Recording of all responses should include a cortical and subcortical pair, usually C3-C4, Cz-Fz, and Cs5-Fz. A peripheral recording pair should be included if there are pre-existing peripheral nerve pathologies or the procedure is likely to involve ischemia to the extremities.
 - D. Filter settings- for cortical responses; low 30Hz, high 500Hz. For subcortical responses; low 30Hz, high 500Hz. *Do not use the 60Hz rejection filter.*
 - E. Averaging- for both upper and lower SSEPs, between 200 and 500 samples should be averaged. Do not increase unless there is a low signal to noise ratio.
 - F. Timebase-Upper extremities, 50 milliseconds. Lower extremities, 100 milliseconds.

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G. Waveform peaks- SSEP waveforms use N and P, respectively, to designate the polarity of the recorded signal (negative is up and positive is down);

- 1) Upper extremities- cortical waveforms should be marked at both N20 and P22. Subcortical waveforms should be marked at P14 and N18. If using a cervical to Fz recording pair, an N13 cervical response will be the most prominent peak.
- 2) Lower extremities- cortical waveforms should be marked at both P37 and N45. Subcortical waveforms should be marked at P31 and N34.

2. For many cervical cases, free run EMG monitoring should be provided. For posterior cervical procedures, free run EMG should always be included. For anterior cervical procedures, free run EMG monitoring is not as useful as TcMEPs, but may be included; consult with the IOM supervisor or physician. Place paired needle electrodes in the appropriate muscles. The use of referential versus bipolar recording pairs depends on the number of surgical levels involved and specificity of the response required, but always ask the IOM supervisor or physician when necessary.

These are the preferred muscles for cervical EMG (**See TABLE 3**);

C3-4 Trapezius
C5 Deltoid
C5-6 biceps
C6-7 triceps
C8-T1 intrinsic hand muscles (apb and adm)
T7-12 external oblique and rectus abdominis

3. For all cervical and thoracic cases, TcMEPs should be provided. TcMEPs provide monitoring for descending corticospinal tracts as well as peripheral motor nerve function. *A bite block must be placed by anesthesia for all TcMEP procedures.*
 - A. TcMEP stimulation– place corkscrew electrodes at C1 and C2. During the procedure, repositioning of the electrodes may be required to optimize the response. Alternative stimulation sites include, Cz-Fz, C3-Fz, C4-Fz, or C3-C4. Always stimulate using both polarities. *Communicate with and/or observe the surgeon before every stimulation.*
 - B. Recording - All responses should include at least one distal muscle group per extremity. For MEPs distal muscles are preferred due to higher cortical representation; bilateral intrinsic hand muscles and bilateral tibialis anterior or foot muscles. Additional muscles should be added as determined by the surgical procedure, consult with the IOM supervisor or physician.
 - C. Patient safety- TcMEPs can be done in patients with cochlear implants, cardiac pacemakers, history of epilepsy after discussion with the IOM supervisor or physician. And, always use a bite block.

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4. TcMEP Interpretation and Troubleshooting- Strict clinical interpretation of TcMEPs should be referred to the IOM physician. However IOM personnel should communicate to the surgeon all findings that are considered significant.
 - A. Anesthetics- All TcMEP procedures should ideally be done using a TIVA protocol. However, in practice, moderate use of inhalational agent can be tolerated (up to 0.5 MAC). The use of inhalational agent has a strong suppression of all TcMEP responses, and can introduce significant variability of all responses throughout the surgical procedure.
 - 1) Inhalational agents- a strong dose dependent suppression.
 - 2) Neuromuscular agents- generally used for intubation, remind the anesthesia staff that, ideally, only a small bolus should be used with a short acting timecourse. The important factor is that baseline responses cannot be obtained until the initial bolus has been metabolized. Occasionally, muscle relaxant will be necessary during the procedure, always document this.
 - 3) Propofol and Benzodiazepenes- some dose dependent effect but usually well tolerated.
 - 4) Opiates- no effect.
 - 5) Ketamine and Etomidate- some increase in amplitude is observed.
 - B. Stimulation troubleshooting
 - 1) Always check both stimulation polarities for all recording montages.
 - 2) Check and adjust the position of the electrodes if necessary.
 - 3) Increase the stimulus by adjusting both the amplitude and varying the number of pulses and pulse interval.
 - C. Recording troubleshooting
 - 1) Has the anesthetic been altered during the procedure. There is a tendency to accumulate with hypothermia, ischemia, elderly, high infusion rates, and long surgeries. Check muscle relaxation using both anesthesia monitoring and TOF monitoring at the hand.
 - 2) Are there intact control responses, if appropriate.
 - 3) Is there a stimulus train artifact present in the recordings.
 - D. Loss of signal troubleshooting
 - 1) What is the quality of the signal earlier, amplitude, level of stimulus.
 - 2) What confounding factors are present, noise, anesthesia.
 - 3) What is the rate of change, gradual or suddenly.
 - 4) Are there correlations to surgical manipulations.
 - 5) Does the change correlate with SSEP changes.

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PURPOSE

To specify criteria for the EEG/EP technologist to inform the surgeon that changes have occurred during the procedure

ALARM CRITERIA

These alarm criteria are dependent upon a number of factors. These include 1) response variability, 2) anesthetic usage, 3) the presence or absence of pre-existing neurologic injury, 4) the rate of response change, and 5) surgical events at the time of change. These criteria must be taken into account when intervention is a consideration.

SSEP MONITORING

	AMPLITUDE CHANGE	LATENCY CHANGE	RESPONSE
LEVEL 1	Decreased up to 30%	increased up to 5%	Minor fluctuation No warning to the surgeon No intervention needed
LEVEL 2	Decreased 30-50%	increased 5- 10%	warning to surgeon of mild adverse changes Intervention optional
LEVEL 3	Decreased 50-75%	increased 10-20%	Warning to the surgeon of Moderate degree of adverse change Intervention desirable
LEVEL 4	Decreased greater than 75%	increased greater than 20%	Warning to the surgeon of Severe adverse change Intervention necessary

TCMEP MONITORING

	AMPLITUDE CHANGE	THRESHOLD CHANGE	RESPONSE
LEVEL 1	Decreased up to 30-50%		Minor fluctuation No warning to the surgeon No intervention needed
LEVEL 2	Decreased 50-85%		warning to surgeon of mild adverse changes Intervention optional
LEVEL 3	Decreased greater than 85%	Greater than 100mV	Warning to the surgeon of Severe adverse change Intervention necessary

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IOM PHYSICIAN POLICY

To specify criteria for the level of physician clinical neurophysiology services in surgical monitoring and testing

I. TYPES OF PROCEDURES: EXAMPLES

A. Neurophysiologist required in the surgical suite

1. Electrocorticography
2. Motor strip mapping
3. Language mapping
4. WADA test
5. Carotid balloon occlusion

B. Neurophysiologist required to monitor on-line (presence in the surgical suite is optional)

1. Carotid cross clamping
2. Aneurysm clipping
3. Aorta cross clamping
4. Spinal cord somatosensory evoked potential monitoring
5. posterior fossa brainstem auditory and somatosensory evoked potential monitoring.

C. Technologist serves an alarm function, with a neurophysiologist on-call as needed.

1. Facial nerve monitoring
2. Burst suppression monitoring

II. EMERGENCIES

- A. Even in urgent or emergency procedures, a neurophysiologist is required in the surgical suite for type A procedures
- B. In urgent or emergency cases, the surgeon must determine whether a neurophysiologist is required on-line for type B procedures

III. OTHER PROCEDURES

Intraoperative monitoring director or clinical supervisor should designate level of monitoring for other procedures.

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TABLE 1

Peak	Field	Generator	Channel	Features
N9	Propagated during erb's	distal brachial plexus	Main negative in EPI-EPc channel	If double (-). Choose first peak
N11		Cervical cords at 5th cervical level, where the median nerve roots enter, branch and synapse	Small negative in C5sp-EPc channel	Usually smaller than N13. But could be prominent in children 1-4. Absent as a normal variant
N13	Near field Stationary (non propagated)	Rostral cervical spinal cord, possibly from the dorsal horn or branches from the dorsal horn. Referred as cervical peak	Main negative C5sp-EPc channel	Do not confuse with a prominent N11
P14	Far field subcortical	Cervico-medullary junction, from the medial lemniscus	Best seen CPi-EPc. Alternativ Cc-EPc	Occurs 1 msec after the N13. In the C5s-FPz(USC/IFCN) would appear as a trapezoid or double peak with the first one being N13
N18	Far field subcortical	Thalamus	Better in CPi-EPc, but not in the Cc-FPz	Appear right before N20
N20	Near field. Use bipolar recording to subtract far field (P14, N18)	Somatosensory cortex	CPc-CPi (isolates N20) Cc-FPz	Negative potential just preceding the sharp drop off of the positive cortical peak
P25			Cc-FPz	When using LFF of 30Hz appears at 22msec.

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TABLE 2

Peak	Field	Generator	Channel	Features
N8		Tibial or sciatic nerve	PF-K, but Widely distributed over lower thoracic and upper lumbar. It is subject to cancellation in bipolar spinal derivations.	Main negative peak. Amplitude is measured from the negative peak to the succeeding positive trough
N19				See N22
N22 (LP)	Near field (stationary) non- propagated.	Post synaptic dorsal grey matter of the lumbar spinal cord.	L1 and T12. T12- IC	Main negative peak in the L1 and T12 . It may be preceded by a smaller negativity occurring around L1 or L3 sites. Careful not to confuse the N22 from an earlier negativity N19, seen over the lower lumbar spine. N22 is dominant, broader and best seen at the thoracolumbar junction. Latency is measured by noting the time of the greatest simultaneous negative peak at the L1 and T12 electrode sites. Amplitude from the N22 to the succeeding positive peak.
P31	Far field ~analogous to N14 in median nerve		FPz-C5sp	This is a small positivity preceding N34
N34	Subcortically generated far field potential (analogous to N18 of median nerve)	Multiple generated sources in the brainstem and perhaps thalamus	FPz-C5sp	
P37			CPz- FPz. If not well found, do a CPi-FPz or CPi-CPc. Needs both midline and ipsilateral scalp location to avoid false negatives. Amplitude from P37 to N45.	Major positive peak in the post central scalp region. It may be preceded by a slightly negative potential , and it is usually succeeded by a prominent negative potential, N45. It may be indistinct or low in amplitude , and its location determined by the succeeding N45. If difficult to find in the
N45				See P37

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TABLE 3

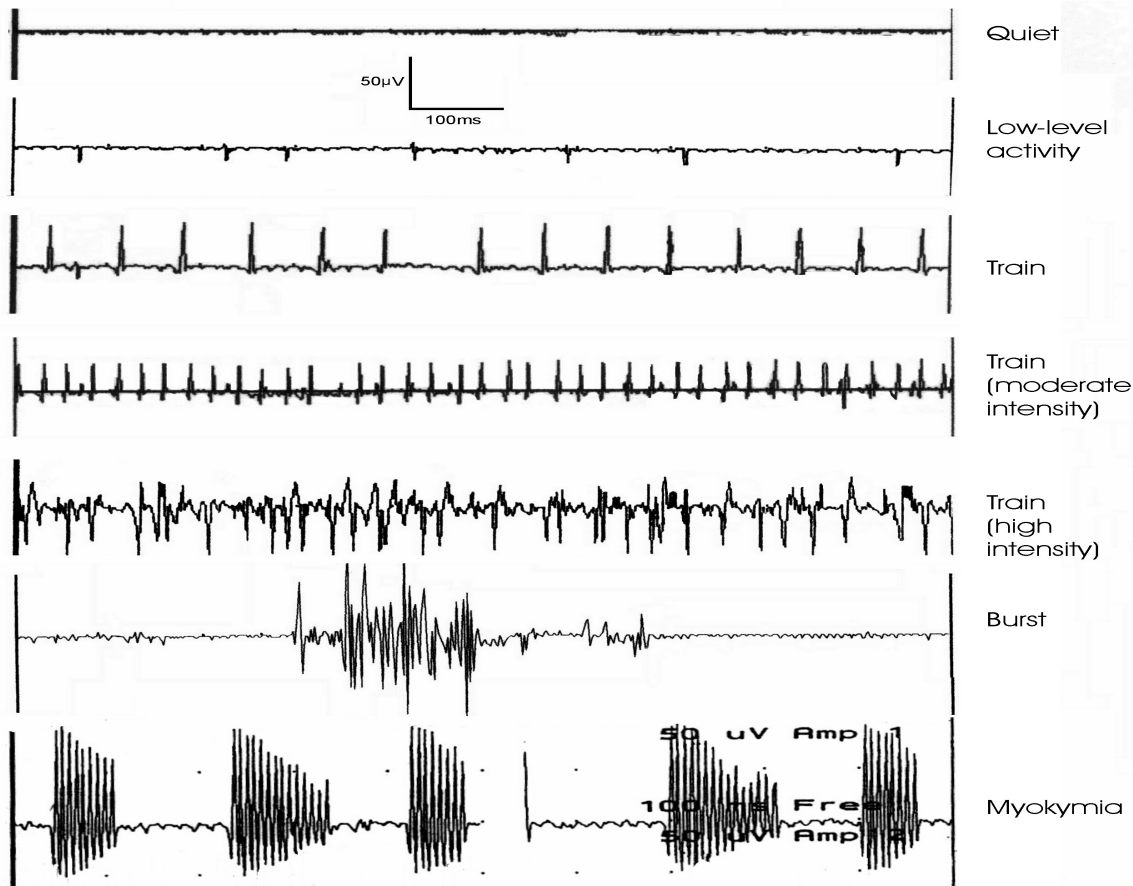
[illegible]

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TABLE 4

Intraoperative EMG Patterns



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TABLE 5

ANESTHETIC	0.5 MAC	MAX FOR SSEP	1 MAC
Isoflurane	0.6	<i>0.9</i>	1.2
Sevoflurane	1.1	<i>1.8</i>	2.2
Desflurane	3.0	<i>3.6</i>	6.0
Nitrous oxide		<i>Do not use</i>	114%

Exhibit E

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PERSONNEL COVERED:	NEUROPHYSIOLOGY STAFF	PAGE:	1	OF	8	

PURPOSE

To ensure the standard of practice for intraoperative monitoring for cranial procedures is maximized.

DEFINITION

Intraoperative Monitoring (IOM) is a set of tests that measure central and peripheral nervous system function during a surgical procedure. For these tests needle (or adhesive disk) electrodes are placed in the scalp, neck, and extremities for recording and stimulation. During these tests waveforms are digitally acquired and recorded. These waveforms are then monitored to assess neurological function.

POLICY

A physician's order is required prior to initiation of procedure.

EQUIPMENT

Cadwell Cascade system, Xomed NIM system

GENERAL PROCEDURE

1. Always arrive at your case at least 15 minutes prior to the scheduled start time and place the computer system to allow for direct connection to the network for remote monitoring. When necessary, patient history and physical can be obtained in pre-op.
2. Before each case, you should have a good understanding of the neural pathway at risk and use the appropriate monitoring modalities to monitor that case. However, always *ASK THE SURGEON* which structures are at risk and if need, modify one of the existing protocols to include these structures. When possible always include a level above as a control, the level of interest and a level below the neural structure at risk during this particular operation. Whenever there is a doubt about what areas to monitor have the IOM supervisor or physician involved.
3. Mention to anesthesia the suggested protocol needed for optimal monitoring. If there is a question as to what to monitor please contact the IOM supervisor or physician.
4. All needle electrodes should be disposable. Placement of all needle electrodes must be done after patient induction, either during or immediately following patient intubation.
5. You must log relevant events and communications to the physicians throughout the procedure. Include relevant physiological variables (e.g. blood pressure, temperature), anesthetic agents and levels.
6. Establishing baselines;
 - A. Baseline values should be established after induction has been complete.
 - B. Baseline values should be re-established or changed as needed, for example, after exposure and when depth of anesthesia changes.

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- C. Any limitations or deficits found in the baseline data should be discussed with the IOM supervisor or physician and then the surgeons notified of any monitoring limitations.
7. When monitoring SSEPs maintain inhaled agents at 0.5 MAC up to 1.0 MAC (**See TABLE 5**). For MEPs, you need 3-4 twitches or as many needed to obtain a response. Maintain inhaled agents at 0.5 MAC or less (see table).
 8. If monitoring EMG you need at least 4 twitches. Please document either “no muscle relaxant given since induction” or number of twitches.
 9. Always contact the IOM supervisor or physician when a significant event occurs.
 10. Remove all electrodes before the patient awakes. Dispose all needle electrodes in the appropriate sharp waste containers.
 11. Place billing and reports into the neurophysiology box within 3 hours after the case.

Cranial surgeries are diverse and these are the most commonly monitored:

Neurovascular procedures

- ☐ cerebral aneurysms
- ☐ occlusion of brain-supplying arteries
- ☐ arteriovenous malformations
- ☐ extracranial-intracranial bypass
- ☐ carotid endarterectomy
- ☐ extracranial vascular reconstruction
- ☐ embolizations

Intracranial and skull base procedures

- ☐ cranial base tumors
- ☐ microvascular decompression
- ☐ DBS - deep brain stimulation
- ☐ epilepsy surgery (localization and mapping of eloquent cortex)
- ☐ fronto-temporal tumors (motor cortex mapping)
- ☐ acoustic neuroma
- ☐ vestibular schwannoma
- ☐ posterior fossa tumors
- ☐ temporo-parietal tumors

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PROCEDURE FOR CRANIAL NEUROVASCULAR IOM

1. For all neurovascular cases, both upper and lower SSEPs are monitored. *Needle electrodes are preferred for all stimulation and recording.*
 - A. Lower extremity stimulation- place needle electrodes bilaterally at the medial malleolus for posterior tibial stimulation. As an alternative, you can use stimulation at the knee around the femoral head for peroneal stimulation. Suggested parameters: Stimulus rate, 4.47Hz. Pulse duration, 200-300 microsecond.
 - B. Upper extremity stimulation- median nerve stimulation is adequate for upper extremities. Suggested parameters: Stimulus rate, 4.47Hz. Pulse duration, 200-300 microsecond.
 - C. Recording channels- all responses should include a cortical and subcortical pair, usually C3-C4, Cz-Fz, and Cs5-Fz. A peripheral recording pair should be included if there are pre-existing peripheral nerve pathologies or the procedure is likely to involve ischemia to the extremities.
 - D. Filter settings- for cortical responses; low 30Hz, high 500Hz. For subcortical responses; low 30Hz, high 500Hz. *Do not use the 60Hz rejection filter.*
 - E. Averaging- for both upper and lower SSEPs, between 200 and 500 samples should be averaged. Do not increase unless there is a low signal to noise ratio.
 - F. Timebase-Upper extremities, 50 milliseconds. Lower extremities, 100 milliseconds.
 - G. Waveform peaks- SSEP waveforms use N and P, respectively, to designate the polarity of the recorded signal (negative is up and positive is down);
 - 1) Upper extremities- cortical waveforms should be marked at both N20 and P22. Subcortical waveforms should be marked at P14 and N18. If using a cervical to Fz recording pair, an N13 cervical response will be the most prominent peak. **(See TABLE 1)**
 - 2) Lower extremities- cortical waveforms should be marked at both P37 and N45. Subcortical waveforms should be marked at P31 and N34. **(See TABLE 2)**
2. For all neurovascular cases, TcMEPs should be monitored. TcMEPs provide monitoring for cerebral perfusion and ischemia. *A bite block must be placed by anesthesia for all TcMEP procedures.*
 - A. TcMEP stimulation— place corkscrew electrodes at C1 and C2. Prior to drapping, repositioning of the electrodes may be required to optimize the response. However, elimination of costimulation is desirable and one should always attempt a medial placement e.g. C1 to C2. Alternative stimulation sites include, Cz-Fz, C3-Fz, C4-Fz, or C3-C4. Always stimulate using both polarities. Decrease the stimulation amplitude to above threshold for contralateral responses. *Communicate with and/or observe the surgeon before every stimulation.*

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- B. Recording - All responses should include at least one distal muscle group per extremity. For MEPs distal muscles are preferred due to higher cortical representation; bilateral intrinsic hand muscles and bilateral tibialis anterior or foot muscles. Additional muscles should be added as determined by the surgical procedure, consult with the IOM supervisor or physician.
- C. Patient safety- TcMEPs can be done in patients with cochlear implants, cardiac pacemakers, history of epilepsy after discussion with the IOM supervisor or physician. And, always use a bite block.
3. TcMEP Interpretation and Troubleshooting- Strict clinical interpretation of TcMEPs should be referred to the IOM physician. However IOM personnel should communicate to the surgeon all findings that are considered significant.
- A. Anesthetics- All TcMEP procedures should ideally be done using a TIVA protocol. However, in practice, moderate use of inhalational agent can be tolerated (up to 0.5 MAC). The use of inhalational agent has a strong suppression of all TcMEP responses, and can introduce significant variability of all responses throughout the surgical procedure.
- 1) Inhalational agents- a strong dose dependent suppression.
 - 2) Neuromuscular agents- generally used for intubation, remind the anesthesia staff that, ideally, only a small bolus should be used with a short acting timecourse. The important factor is that baseline responses cannot be obtained until the initial bolus has been metabolized. Occasionally, muscle relaxant will be necessary during the procedure, always document this.
 - 3) Propofol and Benzodiazepenes- some dose dependent effect but usually well tolerated.
 - 4) Opiates- no effect.
 - 5) Ketamine and Etomidate- some increase in amplitude is observed.
- B. Stimulation troubleshooting
- 1) Always check both stimulation polarities for all recording montages.
 - 2) Check and adjust the position of the electrodes if necessary.
 - 3) Increase the stimulus by adjusting both the amplitude and varying the number of pulses and pulse interval.
- C. Recording troubleshooting
- 1) Has the anesthetic been altered during the procedure. There is a tendency to accumulate with hypothermia, ischemia, elderly, high infusion rates, and long surgeries. Check muscle relaxation using both anesthesia monitoring and TOF monitoring at the hand.
 - 2) Are there intact control responses, if appropriate.
 - 3) Is there a stimulus train artifact present in the recordings.
- D. Loss of signal troubleshooting
- 1) What is the quality of the signal earlier, amplitude, level of stimulus.
 - 2) What confounding factors are present, noise, anesthesia.
 - 3) What is the rate of change, gradual or suddenly.
 - 4) Are there correlations to surgical manipulations.
 - 5) Does the change correlate with SSEP changes.

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4. For all neurovascular cases, free run EEG monitoring should always be provided, however, ask the IOM supervisor or physician when necessary. For recording of burst suppression, a C3-C4 channel is minimally required. Additional channels may be used. Ask the IOM supervisor or physician when necessary.
5. For most neurovascular cases, free run cranial EMG monitoring is *not* needed, however, always ask the IOM supervisor or physician when necessary.
6. For posterior neurovascular cases, recording of ABRs is of value in assessing brainstem function during procedures during which there is a risk of injury to the posterior circulation (see next section for ABR procedure).

PROCEDURE FOR INTRACRANIAL BASED IOM

IOM Auditory Brainstem Responses (ABRs)

Recording of auditory brainstem responses is of value in assessing brainstem function during surgical procedures involving the brainstem, procedures in the cerebellopontine angle, posterior circulation, resection of vestibular schwannoma, and microvascular decompression of cranial nerves V, VII, VIII and IX.

1. ABR stimulation-
 - A. The effects of click polarity on the ABR are in general complex and it is appropriate to begin with alternating clicks but to choose the polarity that provides the best waveform.
 - B. The stimulus intensity will be based upon the individual's preoperative hearing thresholds. It is important to stimulate at a high enough level to obtain maximum amplitude responses. Normally, this would be at or above 70 dB nHL. In the presence of a pre-existing sensory neural hearing loss, stimulus intensities of 90-95 dB nHL may be necessary.
 - C. Stimulus rates of 20-30 Hz will permit nearly instantaneous recording of near-field potentials, 21.1 Hz is often used. If the ABR is of low amplitude and difficult to record, slower stimulus rates may be needed. In all cases the stimulus rate should never be an even divisor of 60Hz.
2. ABR recording-
 - A. The standard electrode montage for recording the ABR is with the non-inverting (+) electrode located at the vertex (Cz) or high forehead and the inverting electrode (-) on the mastoid or ear lobe (M1 or M2; A1 or A2). It is unlikely that the mastoid will be available on the surgical side during a procedure, so the non-inverting electrode may be placed in the skin immediately anterior to the earlobe or tragus. This location will provide an ABR equivalent to that recorded using the more conventional montage.
 - B. An electrode placed on the promontory or the tympanic membrane may record EcochG. The inverting electrode is placed near the cochlea and the non-inverting electrode placed on the one of several locations including the opposite ear, forehead or vertex. A tympanic membrane electrode can be secured in the ear canal. Pre-made tympanic membrane electrodes are commercially available. If there is a question as to what to monitor please contact the IOM supervisor or physician.

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C. The ABR has its primary spectral energy from 50 Hz to 1000 Hz; however, in clinical practice, high-pass filtering is used to attenuate frequencies lower than 100Hz. This reduces the 60 Hz interference without substantially degrading the ABR waveform. However, high-pass filtering can reduce the amplitude of wave V and so, especially in a patient with a preoperatively impaired auditory system, lowering the highpass filter below 100 Hz to 30 Hz may be helpful. A 60 Hz filter should not be used. Low-pass filter cut-off values of 1500-2000 Hz are adequate for intraoperative monitoring.

3. ABR Interpretation-

- A. Comparisons are made between baseline recordings and measures taken at later times during the procedure. Repeated measures are made during monitoring, and interpretation is made in terms of the changes that are observed during the course of the operation.
- B. By itself, EcochG is not helpful for neuromonitoring auditory pathway function because it only evaluates the most distal end of the auditory pathway. Surgical interventions may occur rostral to the generator of the EcochG, making it of little value for tracking the effects of surgical procedures. It remains useful as a stable and readily-recorded reference point from which interpeak intervals to later waves may be measured. EcochG has been applied to monitoring the effectiveness of endolymphatic sac decompression. In those cases one expects to observe a significant decrease in summating potential amplitude following a successful decompression. EcochG may also be used in monitoring the effectiveness of streptomycin infusions for cochlear destruction.
- C. Useful measures for the ABR during monitoring include the latencies of wave I, III and V, if not absent due to pre-existing pathology. The I-III, I-V and III-V interpeak intervals as well as the V/I amplitude ratio are also useful if present. In cases of pre-existing hearing loss, the wave I of the ABR may be too low in amplitude to readily record. In this case, the N1 of the EcochG-CAP is an excellent alternative and reference point for measuring interpeak intervals. Wave I serves as the reference point to account for peripheral events. The interpeak intervals serve as indicators of neural conduction time. If increases are noted in the III-V interval, it suggests that there are changes in function of the structure rostral to the generators of wave III. In these cases systemic changes, such as changes in cerebral circulation, could be occurring and that the anesthesiologist should be notified. If wave III can be recorded, changes in the I-III interpeak interval can be used to identify changes in auditory nerve function. The disappearance of wave III may be the earliest and most sensitive predictor of postoperative deafness, and therefore special attention should be paid to deterioration of wave III. Wave III can be particularly sensitive to specific surgical maneuvers during eighth-nerve tumor resection. Specifically, pulling of the tumor-nerve bundle down or laterally, drilling and direct nerve manipulation caused deterioration of wave III, which was correlated with postoperative hearing loss. The loss of wave V is the most definite indicator of postoperative deafness, but it does not predict whether the loss would be permanent or temporary. The loss of V is the least helpful sign because it typically followed earlier warning signs, the loss of waves I and or III. In general, the ABR shows relatively high sensitivity but relatively poor specificity (high false positive rate) for predicting postoperative hearing loss.
- D. Criteria for warning: Some clinicians support an arbitrary warning criterion of a 50% decrease in amplitude and/or a 10% increase in latency for any evoked potential being monitored. This is not an unreasonable criterion, but it has not been demonstrated to be predictive of postoperative function for monitoring of the auditory system. It is important that the neurophysiologist attend as well to changes in the morphology of the various waves in the ABR that with latency and/or amplitude changes may suggest the possibility of injury to auditory pathways.
- E. The ABR is minimally affected by barbiturates, benzodiazepines, ketamine, nitrous oxide, propofol and muscle relaxants. Halogenated inhalational agents such as isoflurane probably have a mild effect on ABR latency and amplitude that is proportional to the administered dosage. ABR latency and amplitude are systematically affected by core body temperature. As temperature is decreased below 35° there is a prolongation of latencies and interpeak intervals and a decrease in the amplitude of all waves.

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- F. Drilling the skull during surgical exposure creates bone-conducted noise that is carried by the cochlea and will readily mask acoustic stimulation. Hence, ABRs recorded during drilling will be highly variable and not provide accurate information for monitoring purposes.
- G. Cerebellar retraction is required during most CPA surgeries. Depending on the direction of retraction, there can be significant increases in the I-V interpeak interval on the surgical side. Retraction induced latency changes are generally reversible but under certain circumstances can be associated with postoperative hearing loss.
4. Common intracranial procedures not requiring SSEP and TcMEP monitoring but which require ABR and cranial nerve EMG monitoring include microvascular decompression and acoustic neuroma.
- A. Microvascular decompression procedures commonly involve the facial or trigeminal nerve. During these procedures, free run cranial nerve EMG monitoring is provided. ABR monitoring is always offered to the surgeon. The Xomed NIM system is normally used for EMG monitoring during these cases.
- 1) For facial nerve EMG, place a bipolar electrode pair in the ipsilateral obicularis oculi, and a bipolar or referential electrode pair in the obicularis oris. Also place a return and ground electrode near the surgical site.
 - 2) For trigeminal nerve EMG, one electrode pair in either the masseter or temporalis muscle is adequate for most procedures.
 - 3) Direct stimulation of the nerve may be required by the surgeon, the technologist will supply a monopolar disposable stimulator to the surgeon when stimulation is requested. Testing usually includes an initial amplitude of 0.2mA or 0.05mA when directly on the nerve.
 - 4) EMG Interpretation- For all microvascular decompression procedures, EMG monitoring should be provided. Strict clinical interpretation of significant activity should be referred to the IOM physician. However, IOM personnel should communicate to the surgeon all activity that is considered significant.
- Significant EMG activity includes the following (**See TABLE**);
- A. EMG bursts that are closely correlated with manipulation of neural structures.
 - B. Onset of trains of firing at the time of manipulation of neural structures.
 - C. Increase in intensity of EMG trains at the time of manipulation.
 - D. Bursts of activity at the time of pedicle hole drilling.
 - E. Myokymic potentials which usually signify injury to the associated nerve.
- EMG activity that is not likely to be significant;
- A. Continuous low level firing uncorrelated to surgical activity.
 - B. EMG activity correlated to irrigation
 - C. Abnormal spontaneous activity such as fibrillations and positive waves
- B. Acoustic neuroma procedures involve facial nerve monitoring and bilateral ABR monitoring.
- 1) ABR monitoring- see above sections 1, 2, and 3.
 - 2) Facial nerve monitoring- see above section 4.A.1.

Los Angeles County + USC Medical Center
OPERATING POLICIES

DEPARTMENT:	NEUROPHYSIOLOGY	POLICY #:	9-111			
SUBJECT:	ROUTINE INTRA-OP MONITORING – CRANIAL	EFFECTIVE DATE:	01/01/2008			
		REVISED DATE:				
		PAGE	8	OF	8	

5. For many intracranial cases, both upper and lower SSEPs and TcMEPs are monitored. SSEP and TcMEP procedure guidelines are outlined in the neurovascular IOM section. These include the following; cranial base tumors, fronto-temporal tumors, posterior fossa tumors, and temporo-parietal tumors. Additional monitoring for these procedures may include cranial nerve EMG, ABR's, VEP's, or EEG. Please contact the IOM supervisor or physician, e.g. posterior fossa procedures normally include ABR,s. If there is a question as to what to monitor, please contact the IOM supervisor or physician.
6. For fronto-temporal and fronto-parietal tumors, in addition to SSEP and TcMEP monitoring, motor cortex mapping is sometimes requested by the surgeon. If requested, please contact the IOM supervisor or physician.
7. For epilepsy surgeries or temporal lobe tumors, eloquent cortex mapping (e.g. speech mapping) may be requested. If requested, please contact the IOM supervisor or physician.
8. For DBS procedures, a separate monitoring system is used, the Medtronic Leadpoint, and no SSEP or EMG monitoring is provided, please contact the IOM supervisor or physician.

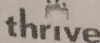
Exhibit F

Defendants were well aware of physical sickness and observable bodily harm suffered by Dr. Cheongsiatmoy as evidenced by the sick days he took off work during his employment with Defendants along with notice of illness provided to USC managing agents with regard to the explanation for his sick days.

USC managing agents Dr. Andres Gonzalez and Dr. Helena Chui who were Dr. Cheongsiatmoy's superiors both received an official "Work Status Report" from the Emergency Room discharge paperwork wherein Dr. Cheongsiatmoy's treating physician medically verified that Dr. Cheongsiatmoy was too ill to work.

Dr. Cheongsiatmoy's treating physician determined that, due to Dr. Cheongsiatmoy's physical sickness, he was too ill to work and instructed that "[Dr. Cheongsiatmoy] is [to be] placed off work from 4/16/2018 through 4/20/2018." See below. USC's harassment and retaliation against Dr. Cheongsiatmoy for his reporting of USC's fraud exacerbated his physical sickness to the point where he was too ill to work, and USC was given notice through his treating physician who prescribed time off work.

Page 1 of 1

KAISER PERMANENTE  thrive

TRAN, THANH Q (M.D.)

Patient Name: Cheongsiatmoy, Justin
Encounter Date & Time: 4/15/2018 7:00 PM

Please see below for this health care provider's directives and information relating to this encounter.

Work Status Report

Date onset of condition:
Next Appointment Date:

Off Work
This patient is placed off work from 4/16/2018 through 4/20/2018

Even though USC managing agents were informed and aware that Dr. Cheongsiatmoy was ill and should NOT have been performing any work, Defendants still billed for services not rendered under Dr. Cheongsiatmoy's Provider ID every single day during the "time off work" period, pursuant to the group billing policy of billing Medicare services under the "pool physician."

The following are examples of 8 different patients under whom Defendants billed for IONM services under Dr. Cheongsiatmoy every day during the week of April 16, 2018 through April 20, 2018, including for Medicare, Medi-Cal, and commercial payor patients for which Defendant still has not made complete refunds to the Governments for the false claims associated with the below patients:

- Monday, April 16, 2018: Patient C [REDACTED] M [REDACTED]
 - Surgeon: Dr. Hsieh, Insurance: Kaiser Sr
- Monday, April 16, 2018: Patient: S [REDACTED] M [REDACTED]
 - Surgeon: Dr. Wang, Insurance: Medicare
- Tuesday, April 17, 2018: Patient R [REDACTED] F [REDACTED]
 - Surgeon: Dr. Liu, Insurance: Medicare
- Wednesday, April 18, 2018: Patient R [REDACTED] F [REDACTED]
 - Surgeon: Dr. Acosta, Insurance: United Healthcare
- Thursday, April 19, 2018: Patient J [REDACTED] R [REDACTED]
 - Surgeon: Dr. Liu, Insurance: Blue Shield
- Thursday, April 19, 2018: Patient A [REDACTED] S [REDACTED]
 - Surgeon: Dr. Hah, Insurance: Medicare
- Friday, April 20, 2018: Patient O [REDACTED] M [REDACTED] e
 - Surgeon: Dr. Zada, Insurance: LA Care
- Friday, April 20, 2018: Patient L [REDACTED] L [REDACTED]
 - Surgeon: Dr. Liu, Insurance: Blue Cross

Exhibit G

From: **Bailey, Rebekah** <bailey@nka.com>

Date: Mon, Jun 26, 2023 at 1:59 PM

Subject: RE: RESCHEDULING Telephonic Conference - 2:18-cv-08311-WLH-AS

United States of America et al v. University of Southern California

To: Karl Lozada <Karl_Lozada@cacd.uscourts.gov>, frank.kortum@usdoj.gov
<frank.kortum@usdoj.gov>, aashish@desai-law.com <aashish@desai-law.com>, Alice
Chang JDMBA <alicechangjdmdba@gmail.com>, Fisher, Kate <kfisher@nka.com>,
Morgan, Matt <morgan@nka.com>, Mark Hardiman
<mhardiman@nelsonhardiman.com>, Jonathan Radke
<jradke@nelsonhardiman.com>, paulcane@paulhastings.com
<paulcane@paulhastings.com>

Cc: Alma Felix <Alma_Felix@cacd.uscourts.gov>, ASChambers
<AS_Chambers@cacd.uscourts.gov>, Bea Martinez
<Beatriz_Martinez@cacd.uscourts.gov>

Good Afternoon,

The attorneys of Nichols Kaster are no longer counsel of record on this case and are not planning to attend. Please let us know if you need anything further.

Thank you,

Rebekah Bailey

Exhibit H

From: **Alice Chang JDMBA** <alicechangjdmba@gmail.com>
Date: Tue, Sep 26, 2023 at 3:20 PM
Subject: Re: U.S. ex. rel. Dr. Cheongsiatmoy v. University of Southern California (Case 2:18-cv-08311-WLH-AS)
To: ASChambers <AS_Chambers@cacd.uscourts.gov>
Cc: Jonathan Radke <jradke@nelsonhardiman.com>, Mark Hardiman <mhardiman@nelsonhardiman.com>, <Ross.Cuff@usdoj.gov>, Kortum, Frank (USACAC) <frank.kortum@usdoj.gov>, <Susan.Gilllin@oig.hhs.gov>, <A.Thomas.Morris@usdoj.gov>, John Fisher <John.Fisher@doj.ca.gov>, Brian Frankel <Brian.Frankel@doj.ca.gov>, Steven Frankland <sgfrankl@da.lacounty.gov>, Marc Beaart <mbeaart@da.lacounty.gov>, <Nathaniel.Spencer-Mork@insurance.ca.gov>, Neumeister, Mitch <mitch.neumeister@insurance.ca.gov>, Alice Chang JDMBA <alicechangjdmba@gmail.com>

Chambers of the Hon. Alka Sagar:

In response to your request below to let you know when the new MSC date has been approved by Judge Hsu, please see the attached Order filed at Dkt. 259 today continuing our MSC date to Friday, October 13, 2023.

Thank you,
Alice Chang
cc: Opposing Counsel, Counsel for Governments

From: **ASChambers** <AS_Chambers@cacd.uscourts.gov>
Date: Thu, Sep 14, 2023 at 2:36 PM
Subject: RE: U.S. ex. rel. Dr. Cheongsiatmoy v. University of Southern California (Case 2:18-cv-08311-WLH-AS)
To: Jonathan Radke <jradke@nelsonhardiman.com>
Cc: alicechangjdmba@gmail.com <alicechangjdmba@gmail.com>, Mark Hardiman <mhardiman@nelsonhardiman.com>

Counsel:

Since Judge Hsu directed the parties to participate in a settlement conference on Sept 28 (Dkt. No. 245), any request to continue that date must be submitted to Judge Hsu. Judge Sagar can be available on the dates the parties have proposed, but the request to continue must be approved by Judge Hsu. Please submit this request to Judge Hsu and let us know.

Thank you,
Frankie



FRANKIE ALLEGRA-GAROFALO
LAW CLERK TO MAGISTRATE JUDGE ALKA SAGAR
UNITED STATES DISTRICT COURT
CALIFORNIA CENTRAL DISTRICT COURT
255 East Temple Street
Los Angeles, CA 90012-3332
Office: (213) 894-2001 Fax: (213) 894-2965
Email: francesca_allegragarofalo@cacd.uscourts.gov

Exhibit I

Exhibit J



**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
WESTERN DIVISION**

HONORABLE ALKA SAGAR
UNITED STATES MAGISTRATE JUDGE
COURTROOM 540, 5TH FLOOR, EDWARD R. ROYBAL FEDERAL BUILDING

Thursday, September 28, 2023

Alma Felix, Courtroom Deputy Clerk

XTR / CS / Zoom:

ITEM NO.	TIME	CASE NAME & NUMBER AND HEARING
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1	10:00 a.m.	CV18-08311-WLH (ASx) United States of America et al v. University of Southern California
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Proceedings: Settlement Conference (in Person)

Attorney for Plaintiff(s):

Frank D Kortum, AUSA
Aashish Y. Desai
Alice Chang
Kate A. Fisher
Matthew H. Morgan
Rebekah L. Bailey

Attorney for Defendant(s):

Mark S. Hardiman
Jonathan Radke
Paul W Cane, Jr.